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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,968	11/14/2003	Jeffrey T. Wetzel	244051US6YA	7489
22850	7590	04/07/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			DOAN, THERESA T	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/706,968	<b>Applicant(s)</b> WETZEL ET AL.	
	<b>Examiner</b> Theresa T. Doan	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 23-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 01/07/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Applicant's election with traverse of the invention of claims 16-22, directed to a method of forming a damascene structure on 01/12/05 is acknowledged. The traversal is on the ground(s) that since the restriction requirement on the grounds that a search and examination of the entire application would not place a serious burden on the Examiner. This is not found persuasive because Applicant has not provided any reasons to support that the species proposed by the Examiner are not distinct species. Finally the search is not coextensive as evidenced by different search for different species. Therefore, the search and examination of the entire application would place a serious burden on the Examiner. The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Gaillard et al. (U.S. Pat. 6,500,773) of record.

Regarding claim 16, Gaillard (figures 4A-4E) discloses a process for forming an integrated circuit structure comprising:

forming a layer of dielectric material 402 on a substrate;

forming a layer of tunable etch resistant anti-reflective (TERA) material 404 (figure 4B, column 7, lines 50-55 and column 6, lines 41-55) on the layer of dielectric material; and

forming a damascene structure for a metal interconnect by using the layer of TERA material 404 as at least one of a lithographic structure for the formation of the interconnect structure, a hard mask, an anti-reflective coating, and a chemical mechanical polishing (CMP) stop layer (see figures 4D and 5E).

Regarding claims 17-18, Gaillard (figures 3D and 4D) discloses further comprising: forming a layer of light-sensitive material (408/304) on the layer of TERA material (404/302), wherein the optical properties of the light-sensitive layer (408/304) and the TERA layer (404/302) are substantially the same; and exposing the layer of light-sensitive material (408/304) to a pattern of radiation, wherein the forming the layer of TERA material (404/302) facilitates producing a pattern in the layer of light-sensitive material (408/304) substantially the same as the pattern of radiation; wherein the forming the layer of TERA material comprises providing a part of the lithographic structure for the formation of a metal interconnect for the device structure (figures 3D and 4D, column 6, lines 41-67, column 7, lines 1-67 and column 8, lines 1-6).

Regarding claim 19, Gaillard discloses wherein the forming the layer of TERA material comprises depositing the layer of TERA material using at least one of plasma enhanced CVD (column 4, lines 34-35).

Regarding claim 20, Gaillard (figure 4D) discloses wherein the forming a damascene structure comprises integrating a tunable anti-reflective coating with a single damascene structure.

Regarding claim 21, Gaillard (figure 5D) discloses wherein the forming a damascene structure comprises integrating a tunable anti-reflective coating with a dual damascene structure.

Regarding claim 22, Gaillard (figures 3D and 4D) discloses wherein the forming a damascene structure comprises integrating a tunable anti-reflective coating with a dual damascene structure formed using a method comprising at least one a via-first method, a full-via-first method, a full-via with no stop layer method, a trench-first method, and a buried via mask method.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Angelopoulos et al. (U.S. Pat. 6,316,167) of record.

Regarding claim 16, Angelopoulos (figures 10-11) discloses a process for forming an integrated circuit structure comprising:

forming a layer of dielectric material (nitride) on a substrate;

forming a layer of tunable etch resistant anti-reflective (TERA) material (R:C:H:X) (figure 10, column 14, lines 11-12) on the layer of dielectric material; and

forming a damascene structure for a metal interconnect by using the layer of TERA material (R:C:H:X) as at least one of a lithographic structure for the formation of the interconnect structure, a hard mask, an anti-reflective coating, and a chemical mechanical polishing (CMP) stop layer (figures 10-11, column 4, lines 55-67 and column 5, lines 1-4).

Regarding claim 20, Angelopoulos (figures 10-11) discloses wherein the forming a damascene structure comprises integrating a tunable anti-reflective coating with a single damascene structure.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T. Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Friday from 7:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WAEL FAHMY can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD  
March 24, 2005.

  
PHAT X. CAO  
PRIMARY EXAMINER